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09/926,193	09/21/2001	Hiroyuki Atarashi	214072US2PCT	4538

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EXAMINER	
WONG, WARNER	

ART UNIT	PAPER NUMBER
2616	

NOTIFICATION DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.	Applicant(s)	
	09/926,193	ATARASHI ET AL.	
	Examiner	Art Unit	
	Warner Wong	2616	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *04 January 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-5,7-15 and 17* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-5,7-15 and 17* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Allowable Subject Matter

1. The indicated allowability of cancelled claims 6, 14, 16 and 18 are withdrawn.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1-5, 7-13, 15 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Baum (US 5,867,478) in view of Sakoda (US 6,532,223).

Regarding claims 1 and 8, Baum describes a channel structuring method/base station wherein transmission signals are modulated by orthogonal frequency division multiplexing (OFDM) comprising n sub-carriers and multiplexed by time division multiplexing to configure downlink channels (col. 3, line 30-35, where OFDM transmission using time and frequency dimensions are used by base unit/station (downlink) to the mobile unit/station), said method/base station comprising:

a step/common channel signal insertion unit for selecting from the n sub-carriers, a predetermined number of sub-carriers for insertion of common pilot signals; and a step/pilot signal insertion unit for inserting a common pilot signal into the selected sub-carriers (fig. 4-6 & col. 9, lines 37-67 & col. 10, lines 1-49, where in each exemplary

embodiment, predetermined sub-carriers are used (selected to) transmit (insert) pilot code (channel) signals, performed by the base unit/station's modulator (pilot signal insertion unit), as described in col. 14, lines 4-16).

wherein providing time frames by segmenting a communication channel of said n sub-carriers at every predetermined interval (fig. 4-13, segmenting into time/baud intervals for all (n) subcarrier);

Although Baum fails to exemplify that above steps are also being used for selecting n sub-carriers and inserting common control channel signals into them, Baum explicitly describes that such examples can be applied to paging or broadcast (i.e. common control) channels: col. 8, lines 53-57 & col. 58-63, "Although the embodiments was based on the coordination of the transmission of a synchronization signal by each base unit, the scheme is not limited to this application. The coordination scheme is also directly applicable to the transmission of paging, system information, broadcast signals, or other information."

Additionally, Sakoda also describes within a wireless telecommunication system (obviously with pilot/beacon signaling), a common control channel (CCH) may be placed in a particular frequency channel/subcarrier (fig. 1) or at different locations (fig. 8) via a predetermined rule or via an irregular sequence/locations based on randomization (col. 7, lines 59-65).

Sakoda explicitly describe that the segmented time frames for all (n) sub-carriers are performed by Time Division Multiple Access (TDMA) with respect to all selected

sub-carriers (col. 4, lines 19-27, TDMA used for the sub-carriers), where TDMA is a form of Time Division Multiplexing (TDM) by definition.

It would have been obvious to one with ordinary skill in the art at the time of invention to understand that the steps for selecting n-sub-carriers and inserting common pilot signal may can also be applied for common control signal per the Baum reference alone or in view of Sakoda.

The motivation for combining the teaching is such provisioned steps can effectively measure the channel responses of co-channel interfering signals (Baum, col. 1, lines 35-38), plus allowing an efficient search and appropriately establishing communication between a base station and a terminal (Sakoda, col. 3, lines 33-40).

Regarding claim 2, Baum and Sakoda combined further suggest:

the common control channel signal and the common pilot signal are inserted periodically into every time frame of said selected subcarriers (Baum, col. 8, lines 53-57 & col. 10, 58-63, inserted at every set of time period/baud (i.e. periodically)).

Regarding claim 3, Baum and Sakoda combined further suggest that the common control channel signal and the common pilot signal are periodically inserted into every time frame of said selected subcarriers, either the common control channel signal or the common pilot signal, or both thereof, is/are inserted at the same timing as either the common control channel signal or the common pilot signal, or both thereof of other subcarriers (fig. 4 & 6, the selected (common) pilot code (channel) signal are

periodically inserted at the same timeslot within the baud interval for every subcarrier, along with the common control signals as described in col. 10, lines 58-63).

Regarding claims 4 and 12, Baum and Sakoda combined suggest:

inserting the common control channel signal continuously into the time frame of said selected subcarriers (fig. 5 in relations to the common control signals as described in col. 10, lines 58-63).

inserting the common pilot channel signal periodically into the time frame of said selected subcarriers (fig. 6,7,8 or 9).

Regarding claim 5 and 13, Baum and Sakoda combined suggest:

inserting the common pilot channel signal continuously into the time frame of said selected subcarriers (fig. 5).

inserting the common control channel signal periodically into the time frame of said selected subcarriers (fig. 6,7,8 or 9 in relations to the common control signals as described in col. 10, lines 58-63).

Regarding claim 7, Baum and Sakoda combined further suggest:

inserting the common control channel signal continuously into the time frame of said selected subcarriers, and inserting the common pilot channel signal continuously into the time frame of said selected subcarriers (fig. 5, for common pilot code (channel) signal are continuously inserted into (predetermined) subcarriers 502, 504, 506 & 508 and col. 9, lines 61-66 in relations to fig. 5 for the paging/broadcasting (common control) channel counterpart).

Regarding claim 9, Baum and Sakoda combined further suggest:

inserts the common control channel signal periodically into every time frame of said selected subcarriers (fig. 5, col. 9, lines 9-11 & col. 10, lines 58-63, inserting pilot and broadcast signals to all or pre-selected (predetermined subset of) n subcarriers).

Regarding claim 10, Baum and Sakoda combined further suggest:

common pilot signal insertion means selects a predetermined number of subcarriers from said n subcarriers, and inserts the common pilot channel signal periodically into every time frame of said selected subcarriers (fig. 5);

Regarding claims 11 and 15, Baum and Sakoda combined further suggest:

said common pilot signal insertion means selects a predetermined number of subcarriers from said n subcarriers and inserting the common pilot periodically into every time frame of said selected subcarriers (fig. 5, where pilot code signals are being inserted to all or pre-selected (predetermined subset of) n subcarriers), and

said common control channel signal insertion means and said common pilot signal insertion means insert the common control channel signal and the common pilot signal, respectively, into said selected subcarriers such that a timing of the insertion of either the common control channel signal or the common pilot signal, or both, are same as the timing of either the common control channel signal or the common pilot signal, or both, of other subcarriers (fig. 5 in relation to col. 10, lines 58-64 for paging/broadcast (i.e. common control) channels).

Regarding claim 17, Baum and Sakoda combined further suggest:

said common pilot signal insertion means selects a predetermined number of subcarriers from said n subcarriers, and inserts the common pilot signal periodically into

every time frame of said selected subcarriers (fig. 4 or 6, where pilot code (channel) signal is being periodically inserted to all or pre-selected (predetermined subset of) n subcarriers).

Response to Arguments

1. Applicant's arguments filed January 4, 2008 have been fully considered but they are not persuasive.

On p. 10 second paragraph, the applicants doubted the relevance in combining the references of Baum and Sakoda. Specifically, the applicants argue that "combination of prior art would change the principle of operation of the prior art invention being modified .. the suggested combination of references would require a substantial reconstruction and redesign of the elements shown in Baum as well as a change in the basic principle under which the Baum construction was designed to operate." The examiner respectfully disagree.

Both Baum and Sakoda describe wireless cellular transmission. Both harness designated timeslots within designated multicarriers (multi-frequencies) for their pilot and common control transmission (see Baum, fig. 4-13 & Sakoda, fig. 6, 8). In fact, both references transmits using OFDM (i.e. orthogonal multi-frequency transmission – Baum's title & Sakoda's col. 5, lines 3-11) and TDMA (i.e. using timeslots within periodic time interval). The examiner also noted that a relevant motivation has been provided in the Office Action for combining Sakoda to Baum. The examiner re-asserts that it would

have been obvious to one of ordinary skill in the art to review the Baum and Sakoda references and combine the findings to derive the claimed inventions.

Starting on p. 9 last paragraph and continuing on p. 10 last paragraph, the applicants asserts that the amended claims differentiates from the combined references of Baum and Sakoda in which " provide time frames by segmenting a communication channel of n sub-carriers at every predetermined interval such that a predetermined number of subcarriers may be selected from the n sub-carriers for insertion of common control channel signals and common pilot signals such that both a common control channel signal and a common pilot signal may be inserted into the time frames by time division multiplexing with respect to at least one of the selected sub-carriers". The examiner respectively disagrees.

The examiner understands that TDMA by definition is a form of TDM (time division multiplexing). The Office Action has been written to convey that the combination of Baum and Sakoda uses TDMA (TDM) to segment the respective sub-carriers used for transmission (again, see Baum, fig. 4-13 & Sakoda, fig. 6, 8).

Hence, Baum and Sakoda combined meet all argued claimed limitations.

Conclusion

2. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure: Gibbons (US 7,324,495) describing broadcast channels and pilots in frequency and time slots.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kwang Yao can be reached on 571-272-3182. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Warner Wong
Examiner
Art Unit 2616

WW

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SUPERVISORY PATENT EXAMINER